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60300 7590 04/29/2008 LAW OFFICES OF CHARLES GUENZER ATTN: APPLIED MATERIALS, INC. 2211 PARK BOULEVARD P.O. BOX 60729 PALO ALTO, CA 94306				
EXAMINER				
PAIK, SANG YEOP				
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**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Application Number: 10/788,979  
Filing Date: February 27, 2004  
Appellant(s): ADERHOLD ET AL.

\_\_\_\_\_  
Charles S. Guenzer  
For Appellant

**EXAMINER'S ANSWER**

This is in response to the appeal brief filed 10/7/08 and the supplemental brief of 2/11/08  
appealing from the Office action mailed 5/16/07.

**(1) Real Party in Interest**

A statement identifying by name the real party in interest is contained in the brief.

**(2) Related Appeals and Interferences**

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

**(3) Status of Claims**

The statement of the status of claims contained in the brief is correct.

**(4) Status of Amendments After Final**

Claims 6 and 16 have been cancelled in the amendment after final received on 7/16/07 which was entered on 8/3/07 by the examiner.

**(5) Summary of Claimed Subject Matter**

The summary of claimed subject matter contained in the brief is correct.

**(6) Grounds of Rejection to be Reviewed on Appeal**

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

**(7) Claims Appendix**

The copy of the appealed claims contained in the Appendix to the brief is correct.

**(8) Evidence Relied Upon**

6,090,210	Ballance et al	7-2000
6,113,703	Anderson et al	9-2000
4,891,499	Moslehi	1-1990

Application/Control Number: 10/788,979

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4,956,538

Moslchi

9-1990

**(9) Grounds of Rejection**

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1-5, 7-9, 12-15, 17-19 and 30-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ballance et al (6,090,210) or Anderson et al (US 6,113,703) in view of Moslehi (US 4,891,499) or Moslehi (US 4,956,538).

Ballance or Anderson shows the method and apparatus claimed including a radiant source, means for holding a wafer substrate with an edge which extends to the substrate, a reflector, and a pyrometer for measuring the temperature of the wafer substrate. Anderson further shows a sloped annular shelf (16). But neither Ballance nor Anderson shows having a wafer substrate facing downwardly.

Moslehi '499 or Moslehi '538 shows that it is well known in the art to provide a wafer positioned with a face down for processing the wafer including heating and monitoring of the temperature of the wafer. In view of Moslehi '499 or '538, it would have been obvious to one of ordinary skill in the art to adapt Ballance or Anderson with the wafer faced down to alternatively process the wafer as desired by the user, and as such wafer is faced down the pyrometer of Ballance and Anderson would pyrometrically measure the front side of the wafer.

With respect to the recited edge exclusion zone, it would have been obvious to one of ordinary skill in the art to provide the holding means with the recited extension to sufficiently support the wafer without overlapping or limiting the availability of a working surface of the front side of the wafer

**(10) Response to Argument**

With respect to Ballance, the appellant argues that the appellant's claimed RTP chamber differs from that of Ballance by the inversion of the wafer substrate and the details of the support ring useful for the inverted wafer. It is noted, however, that while the invention relates to an RTP chamber, the claims do not recite such RTP chamber in the body of the claims. Furthermore, Ballance relates to the RTP chambers, and the inversion of the wafer substrate is shown by the Moslehi references '499 and '538.

With respect to Anderson, the appellant argues that the pyrometers in Anderson measure the heat plates (60, 62) rather than the wafer substrate and that since the temperatures measured by the pyrometers of Anderson do not necessarily correspond to the temperature of the wafer, the relevance of the Anderson reference is not clear and is less relevant to the claimed invention than Balance. This argument is not deemed persuasive since Anderson clearly shows that the temperatures of the heat plates measured by the pyrometers are indicative of the temperatures of the wafer (see column 6, lines 1-4), and such disclosure clearly meets pyrometrically monitoring of the substrate in a thermally processing reactor/chamber.

With respect to the combination of Ballance and the Moslehi reference '499, the appellant argues such combination is improperly based on hindsight and is also based on picking and choosing of different parts without reasoning. The appellant further argues since Ballance shows a backside pyrometry on a frontside-up wafer and Moslehi '499 with a backside pyrometry on a frontside-down wafer, the appellant concludes that an ordinary mechanic would have concluded that the only preference is the backside pyrometry and not the pyrometric monitoring of the frontside of the frontside-down wafer as required by claim 1. It is noted that Ballance is silent as

to which side of the wafer is faced up or faced down, and there is no reason or disclosure in Ballance that such backside pyrometry on a frontside-up of the wafer is always how the wafer is processed. The Mosley references are then applied to explicitly show that it is known in the art that in a RTP chamber, a wafer with its front face down process has been and can be performed. Furthermore, while Moslehi '499 and Moslehi '538 show orienting the wafer with its face down in the RTP chamber, both Moslehi references do not limit its application in such orientation. Moslehi '499 further discloses that wafer is usually faced down (column 5, line 63) which suggest to one of ordinary skill that the wafer can face up if desired. Thus, the appellant's argument to suggest that Moslehi only teaches the backside pyrometry is not deemed persuasive. Also, since Moslehi teaches that the wafer is usually faced down in the RTP chamber processing, there is more reason that the wafer in Ballance would have been faced down as well.

The appellant also argues Moslehi '499 does not involve pyrometry because Moslehi '499 does not include probe beam. It is noted that Moslehi '538 shows the pyrometry monitoring of the wafer with a laser beam that it directed to the wafer with an infrared detector (59) to further measures a transmitted beam through the front side of the wafer for determining the emissivity of the wafer which is then used to measure the wafer temperature (column 6, lines 18-32), and Moslehi '499 also likewise uses the electrical optical laser beam to measure the emitted infrared radiation to subsequently measure the temperature of a wafer substrate. Thus, the appellant's argument to suggest for the use of only the probe beam to qualify for the pyrometry process is not deemed persuasive. Furthermore, it is noted that there is no disclosure or teaching in the a appellant's invention that pyrometry is limited to utilizing only the probe beam. It is known in the art that pyrometry is a broad term which is known to use an optical electrical

radiation as the means for measuring parameters such temperatures of an object, and since Moslehi '499 uses the emitted radiation measured by the infrared detectors for determining the temperature of the wafer, Mosley '499 also clearly meets the pyrometry process.

Thus, it would have been obvious to one of ordinary skill in the art to adapt Ballance with the wafer with its face down orientation, as an alternative means, to measure the temperature of the wafer as is known in the prior art of the Moslehi references.

With respect to the annular ring as the means for holding a wafer, Ballance shows an annular ring (18), Anderson shows the means (16) with a slope shelf for holding wafer, and Moslehi '499 shows an annular ring with pins (50) for supporting a wafer. The appellant argues that since Ballance shows supporting only the backside of the wafer and with Moslehi '499 only for the front-side wafer, it would not have been obvious to combine these references and that one of ordinary skill in the art, an ordinary mechanic, would have been led to adapt Moslehi '499 only for a frontside-down wafer and Ballance only for a backside-down wafer. This argument is not deemed persuasive since Ballance is silent as to whether or not the wafer substrate is faced up or down, and none of the applied prior art limits processing the wafer in any limited orientation. Also, while the applied prior art does not explicitly uses the term "exclusion zone", the exclusion zone is disclosed as the peripheral zone of a wafer devoid of a integrate circuits as illustrated in Figure 2 (prior art) of the appellant's specification. In light of such disclosure, it would have been obvious to one of ordinary skill in the art to provide the annular shelf/ring not to extend into the useful working surface area of the wafer in the recited range or any other suitable range to limit or waste such useful working wafer area. With respect to claims 31 and 32, Anderson shows the support shelf that is sloped and it would have been obvious to provide



the annular ring with the sloped shelf to sufficiently and adequately support the wafer. With respect to the recited reflector, Ballance, as modified by the Moslehi references, shows the reflector (28) that would have faced the wafer's front side.

**(11) Related Proceeding(s) Appendix**

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Sang Y Paik/

Primary Examiner, Art Unit 3742

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